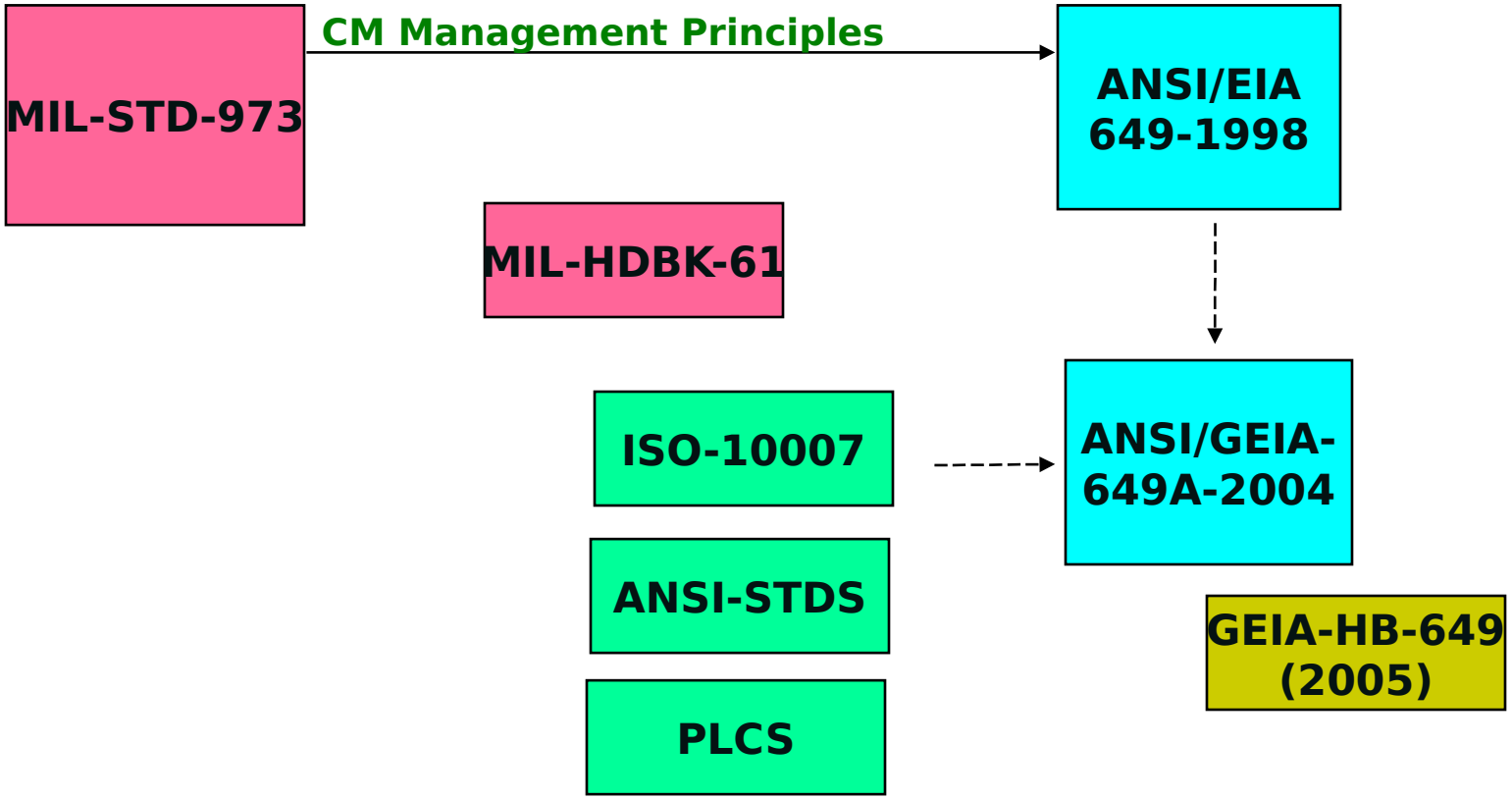
Configuration Management, Logistics, and Universal CM Issues

Larry Bauer
Boeing Commercial Airplanes

NDIA Conference
Miami
March 4-5, 2005

larry.d.bauer@boeing.com

Configuration Management Standards Evolution



CM Overview

CM Functions per GEIA-649A

CM PLANNING & MANAGEMENT

Selection, tailoring, guidance, oversight

CONFIGURATION IDENTIFICATION

Attributes, identifiers, baselines

CONFIGURATION STATUS ACCOUNTING

CM information & status

CONFIGURATION CHANGE MANAGEMENT

Manage changes

CONFIGURATION VERIFICATION/AUDIT

Verify performance &

Separate in 649; Merged in 649A

CM OF DIGITAL DATA

Assure data integrity

GEIA-HB-649 (DRAFT) Implementation Guide for Configuration Management

- **Handbook providing guidance for the implementation of a robust CM process regardless of:**
  - **product complexity,**
  - **size,**
  - **customer or**
  - **business objectives**
- **Provides advice and guidance for tailoring CM processes according to need and business requirements**

GEIA-HB-649 (DRAFT) Implementation Guide for Configuration Management (Cont)

- **Targeted for release 2nd quarter 2005**
- **NOT a replacement for MIL-HDBK-61**

5 Functions of CM

- **How do the 5 Functions of CM support Logistics?**
  - **Planning and Management**
  - **Identification**
  - **Change Management**
  - **Configuration Status Accounting**
  - **Verification and Audit**

CM Planning and Management

- To assure that the **appropriate CM processes, tools,** and activities are applied
- To establish CM **organizational responsibilities**
- To determine the necessary **resources and facilities**

CM Planning and Management

(cont)

- To provide a basis for **continuous improvement**
- To enhance the **maturity** of the enterprises process
- To ensure data **preservation** and **interoperability**

Configuration Identification

- Determines **structure** of the product & documentation
- Defines **performance, interface** & other attributes
- Provides **unique identity** to product,
  components and documentation

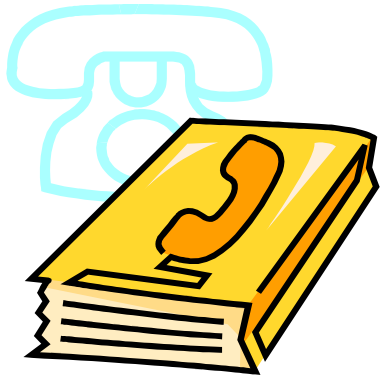
Configuration Identification

(cont)

- Prescribes **identification marking**
- Modifies **product and document identifiers** to reflect incorporation of major changes
- Maintains **release control** and **baseline** definition
- Provides **reference for changes** & corrective actions

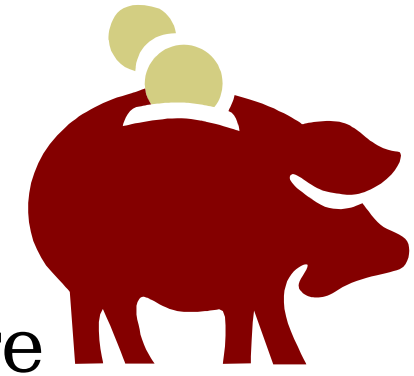
Configuration Identification (cont)

- Correlates **document revision** level to **product configuration**
  - Enables user to distinguish between **product versions**
  - Enables service person to **correlate product to instructions**
  - Correlates units to **warranty/service life**



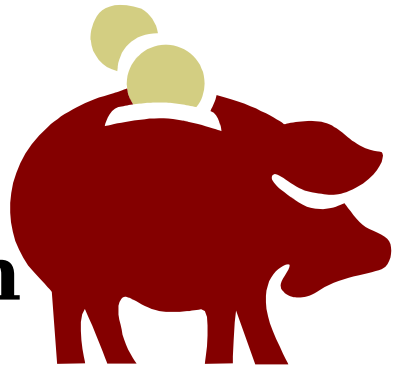
Configuration Change Management

- Enable change decisions to be based on knowledge of **complete change impact**
- Limit changes to those which are **necessary** or offer **significant benefit**
- Facilitate **evaluation of cost, savings & trade-offs**



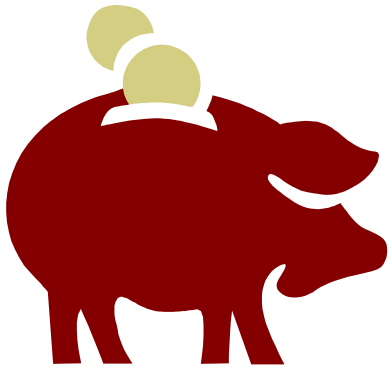
Configuration Change Management (cont)

- Ensure **customer interests** are considered
- Provide **orderly communication** of change information
- Preserve configuration control at **product interfaces**
- Maintain and control a **current configuration baseline**



Configuration Change Management (cont)

- Maintain **consistency** between product and documentation
- Document and **limit variances**
- Facilitate continued **supportability of the product** after change

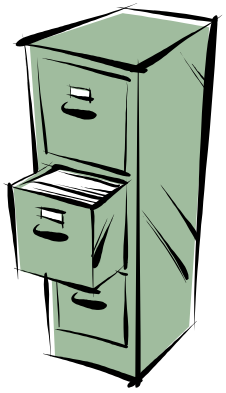


Configuration Status Accounting

- Enables retrieval of information concerning **change decisions** and **change impacts**
- Supports inquiries concerning **future planning of design changes**, investigation of design problems, warranties, shelf and operating life calculations, etc.
- Access to **complete configuration information on a product**, any individual product unit, or group of product units

Configuration Status Accounting

- Access to **accurate identification** of each **delivered product** unit
- Improves capability to **identify, produce, inspect, deliver, operate, maintain, repair, and refurbish products**
- Enhances availability of **accurate information on spare parts** and maintenance support
- Source for **configuration history**



Verification and Audit

- Ensure the product design provides the agreed to **performance** capabilities
- Validate the **integrity** of the configuration documentation
- Verify the **consistency** between a product and its configuration documentation
- Provide confidence in establishing a **product baseline**

Verification and Audit

- Ensure a **known configuration** as a basis for operation and maintenance instructions, training, spares and repair parts.
- Determine that an adequate **process(es)** is in place to provide continuing control of the configuratio
- Provides for continuous CM **proces** improvement

CM Support of Logistics

- **Provides current identification of:**
  - Items in inventory by location
  - Maintenance, Repair and Service Manuals and Records
- **Provides Records of:**
  - Repairs
  - Modifications
  - Removals

CM Support of Logistics
(CONT)

- **Validates:**
  - Inventory
  - Location of items
  - Configuration of in-service and retired items
- **Supports:**
  - Location of needed Spares
  - Visibility of upgrades, qualified replacements, and authorized substitutions

Global CM and Universal CM Issues

- **CM issues are common throughout industry and government**

  - Supplier Management
  - Documentation Hierarchies
  - Efficient and Effective Change Management
  - Level of Rigor/intensity of CM processes in Product Development vs. Production
  - Control of Test/Development Configurations

Global CM and Universal CM Issues

- **CM issues are common throughout industry and government**
  - Tool selection and integration
  - Control of multiple Software versions
  - CM organization is popular after an accident or incident
  - Accurate repair history
  - Retrofit control

CM and Logistics - Summary

- **Configuration Management provides logistics with accurate:**
  - Configuration Identification
  - Configuration Change history
  - Inventory Management
  - Upgrade and Substitution visibility
  - Repair and Service records
  - Removal visibility